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Ground Water in Certain Sites in Egypt and Its Treatments Using a New Modified Ion Exchange Resin—Characterization of Water and Modified Ion Exchange

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ABSTRACT

The present work is a comprehensive of drinking water quality. Eleven groundwater samples were taken from various rural regions of Egypt, the groundwater samples were investigated for chemical, radiometric and heavy metals analyses, the major cations including; sodium (), potassium (), calcium () and magnesium () ions species, the major anions of chloride (), sulphate (), nitrite (), phosphate (). Radiometric analyses in water expressed as the gross alpha and beta activity concentrations, heavy metals analyses including arsenic (), lead (), cobalt (), manganese (), iron () and cadmium () ions. The groundwater samples were found to contain high concentrations of heavy metals than the limited values of the world health organization (WHO). Heavy metals speciation were performed using MinteqA2 geochemical code. A modified exchange resin was prepared by polymerization of the condensed dioxalyl p-sulphanilamide with phenol, this ion exchange resin was examined by the different techniques such as; x-ray diffraction, infra red spectra (IR), and electronic microscopic, it was found a good adsorbent material that used for the reduction of heavy metals from contaminated groundwater samples.

KEYWORDS

Ion Exchange, Groundwater, Heavy Metals, Sorption

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